

WHAT IS CLAIMED IS

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1. An isolated protein comprising a member selected from the group consisting of:
 - (a) a polypeptide of at least 20 contiguous amino acids from the polypeptide selected from the group consisting of SEQ ID NOS: 2 or 4;
 - (b) a polypeptide selected from the group consisting of SEQ ID NOS: 2 or 4;
 - (c) a polypeptide having at least 70% sequence identity to, and having at least one linear epitope in common with, a polypeptide selected from the group consisting of SEQ ID NOS: 2 or 4, wherein the percent sequence identity is determined according to the GAP program using the default settings; and
 - (d) a polypeptide encoded by a polynucleotide which selectively hybridizes under stringent hybridization conditions and a wash in 0.1X SSC at 60°C to a polynucleotide selected from the group consisting of SEQ ID NOS: 1 and 3.
 2. A recombinant expression cassette, expressing a member of claim 1.
 3. A non-human host cell comprising the recombinant expression cassette of claim 2.
 4. A transgenic plant comprising the recombinant expression cassette of claim 2.
 5. The transgenic plant of claim 4, wherein said plant is a monocot or dicot.
 6. The transgenic plant of claim 5, wherein the plant is selected from the group consisting of: maize, soybean, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, and millet.



7. ~~A transgenic seed from the transgenic plant of claim 4.~~

8. A method of increasing targeted gene insertion comprising:

- 5 (a) introducing into a plant cell a polynucleotide of interest and a Rad23 polynucleotide encoding a Rad23 polypeptide to produce a transformed cell;
- (b) culturing the transformed plant cell under cell growing conditions; and
- 10 (c) inducing expression of the Rad23 polypeptide for a time sufficient to increase the targeted gene insertion of the polynucleotide of interest.

9. The method of claim 8, wherein the polynucleotide encodes a Rad23 polypeptide selected from the group consisting of:

- 15 (a) a polypeptide of at least 20 contiguous amino acids from the polypeptide selected from the group consisting of SEQ ID NOS: 2 or 4;
- (b) a polypeptide selected from the group consisting of SEQ ID NOS: 2 or 4;
- 20 (c) a polypeptide having at least 70% sequence identity to, and having at least one linear epitope in common with, a polypeptide selected from the group consisting of SEQ ID NOS: 2 or 4, wherein the percent sequence identity is determined according to the GAP program using the default settings; and
- 25 (d) a polypeptide encoded by a polynucleotide which selectively hybridizes under stringent hybridization conditions and a wash in 0.1X SSC at 60°C to a polynucleotide selected from the group consisting of SED ID NOS: 1 and 3.

30 10. The method of claim 8, wherein the plant cell is from a monocot or a dicot.

11. The method of claim 10, wherein the plant cell is selected from the group consisting of: maize, soybean, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, and millet.
- 5 12. A transformed plant cell produced by the method of claim 8.
13. The plant cell of claim 12, wherein the plant cell is from a monocot or a dicot.
- 10 14. The plant cell of claim 13, wherein the plant cell is selected from the group consisting of: maize, soybean, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, and millet.
- 15 15. The method of claim 8, wherein the transformed plant cell is grown under conditions sufficient to produce a transformed plant.
16. A transformed plant produced by the method of claim 15.
17. The plant of claim 16, wherein the plant is a monocot or a dicot.
- 20 18. The plant of claim 17, wherein the plant is selected from the group consisting of: maize, soybean, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, and millet.
- 25 19. A transgenic seed produced by the plant of claim 16.
20. The method of claim 8, wherein the Rad23 polynucleotide and the polynucleotide of interest are introduced in to the plant cell simultaneously.
- 30 21. A transformed plant cell produced by the method of claim 20.

22. The plant cell of claim 21, wherein the plant cell is from a monocot or a dicot.

23. The plant cell of claim 22, wherein the plant cell is selected from the group consisting of: maize, soybean, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, and millet.

24. The method of claim 20, wherein the transformed plant cell is grown under conditions sufficient to produce a transformed plant.

25. A transformed plant produced by the method of claim 24.

26. The plant of claim 25, wherein the plant is a monocot or a dicot.

27. The plant of claim 26, wherein the plant is selected from the group consisting of: maize, soybean, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, and millet.

28. A transgenic seed produced by the plant of claim 25.

29. The method of claim 8, wherein the Rad23 polynucleotide is introduced into the plant cell prior to the introduction of the polynucleotide of interest.

30. A transformed plant cell produced by the method of claim 29.

31. The plant cell of claim 30, wherein the plant cell is from a monocot or a dicot.

32. The plant cell of claim 31, wherein the plant cell is selected from the group consisting of: maize, soybean, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, and millet.

33. The method of claim 29, wherein the transformed plant cell is grown under conditions sufficient to produce a transformed plant.
34. A transformed plant produced by the method of claim 33.
35. The plant of claim 34, wherein the plant is a monocot or a dicot.
36. The plant of claim 35, wherein the plant is selected from the group consisting of: maize, soybean, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, and millet.
37. A transgenic seed produced by the plant of claim 34.
38. A method of increasing transformation efficiency comprising:
- (a) introducing into a plant cell a polynucleotide of interest and a Rad23 polynucleotide encoding a Rad23 polypeptide to produce a transformed cell;
 - (b) culturing the transformed plant cell under cell growing conditions; and
 - (c) inducing expression of the Rad23 polypeptide for a time sufficient to increase the targeted gene insertion of the polynucleotide of interest.
39. The method of claim 38, wherein the polynucleotide encodes a Rad23 polypeptide selected from the group consisting of:
- (a) a polypeptide of at least 20 contiguous amino acids from the polypeptide selected from the group consisting of SEQ ID NOS: 2 or 4;
 - (b) a polypeptide selected from the group consisting of SEQ ID NOS: 2 or 4;
 - (c) a polypeptide having at least 70% sequence identity to, and having at least one linear epitope in common with, a polypeptide selected from the group consisting of SEQ ID NOS: 2 or 4, wherein the

percent sequence identity is determined according to the GAP program using the default settings; and

- (d) a polypeptide encoded by a polynucleotide which selectively hybridizes under stringent hybridization conditions and a wash in 0.1X SSC at 60°C to a polynucleotide selected from the group consisting of SED ID NOS: 1 and 3.

40. The method of claim 38, wherein the plant cell is from a monocot or a dicot.

41. The method of claim 40, wherein the plant cell is selected from the group consisting of: maize, soybean, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, and millet.

42. A transformed plant cell produced by the method of claim 38.

43. The plant cell of claim 42, wherein the plant cell is from a monocot or a dicot.

44. The plant cell of claim 43, wherein the plant cell is selected from the group consisting of: maize, soybean, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, and millet.

45. The method of claim 38, wherein the transformed plant cell is grown under conditions sufficient to produce a transformed plant.

46. A transformed plant produced by the method of claim 45.

47. The plant of claim 46, wherein the plant is a monocot or a dicot.

48. The plant of claim 47, wherein the plant is selected from the group consisting of: maize, soybean, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, and millet.

49. A transgenic seed produced by the plant of claim 46.

5 50. The method of claim 38, wherein the Rad23 polynucleotide and the polynucleotide of interest are introduced into the plant cell simultaneously.

51. A transformed plant cell produced by the method of claim 50.

10 52. The plant cell of claim 51, wherein the plant cell is from a monocot or a dicot.

15 53. The plant cell of claim 52, wherein the plant cell is selected from the group consisting of: maize, soybean, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, and millet.

54. The method of claim 50, wherein the transformed plant cell is grown under conditions sufficient to produce a transformed plant.

20 55. A transformed plant produced by the method of claim 54.

56. The plant of claim 55, wherein the plant is a monocot or a dicot.

25 57. The plant of claim 56, wherein the plant is selected from the group consisting of: maize, soybean, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, and millet.

58. A transgenic seed produced by the plant of claim 55.

30 59. The method of claim 38, wherein the Rad23 polynucleotide is introduced into the plant cell prior to the introduction of the polynucleotide of interest.

60. A transformed plant cell produced by the method of claim 59.

61. The plant cell of claim 60, wherein the plant cell is from a monocot or a dicot.
- 5 62. The plant cell of claim 61, wherein the plant cell is selected from the group consisting of: maize, soybean, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, and millet.
63. The method of claim 59, wherein the transformed plant cell is grown under
10 conditions sufficient to produce a transformed plant.
64. A transformed plant produced by the method of claim 63.
65. The plant of claim 64, wherein the plant is a monocot or a dicot.
- 15 66. The plant of claim 65, wherein the plant is selected from the group consisting of: maize, soybean, sunflower, sorghum, canola, wheat, alfalfa, cotton, rice, barley, and millet.
- 20 67. A transgenic seed produced by the plant of claim 64.